Plastic Products

Combining

"Plastics & Molded Products" and "Cellulose"

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Plastic Products

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VOLUME IX NUMBER 1

Plastic Panaceas

FROM falling hair to fallen arches, Old Doctor Hokem's marvelous Elixir was extensively advertised as the perfect cure-all. With similar zeal the makers of Soilblood Fertilizer--"the good old reliable 6-8-4 formula"---was recommended for potatoes in rocky Maine and cotton in sandy Georgia. Both were marketed on the easy theory that the wider the claims, the greater the sales. Gunshot prescription and all-around fertilizer have both now faded into memories; but they still raise their horrid heads to haunt their makers.

To claim too much; to try to sell everyone; to disparage one's competitors---these are the signs of the young industry. Like most youthful faults, they cure themselves in due time; but they appear ridiculous and become dangerous if too long indulged.

This molding powder and that lacquer have time and again been hailed as the "ideal," the "ultimate," the "universal." We all recognize the symptoms at once. And that is a good sign.

As a matter of fact, if we consider the nature of our synthetic plastic materials realistically, we cannot but recognize that they are highly specialized products. Though there is still much to be learned of their chemical composition, their physical characteristics are sharply defined and distinctive. If we know anything about them, it is that each possess certain properties peculiarly adaptable for particular uses.

These specialized characteristics ought not to be smothered in blanket claims of excellence for every conceivable purpose. The real future of plastic materials lies not as general substitutes for anything coral to copal, but as highly specialized products better than any natural raw material for specific purposes, often with extremely exacting demands. Even in a given class there is no best plastic. There is always a best plastic for any given use. And one of the chief tasks of PLASTIC PRODUCTS shall be to help the user of plastic materials find the most appropriate one and indicate to him just how he may use it most effectively and efficiently. This is the best way to extend the uses of plastics.

THE plastics industry plays so important a part in the industrial and every day life of the nation that it is hard to realize that it is largely a post-war development. Its rapid growth during the past decade has been the result not only of technical developments within the industry and raw material field, but also of the variety of its applications and the aesthetic as well as utilitarian appeal of plastic products to the consumer.

A large domestic consumption in a constantly widening field is augmented by an expanding foreign market. Maintenance of forward-looking policies and continuance of a comprehensive distribution program present a promising future for the industry. The Department of Commerce has always sought to aid new and progressive developments and will continue such efforts.

Roy D. Chapin

Artistic Abuse of the Plastics

By Joseph Sinel

If "going modern" means only a crazy chase after design that is merely arresting in form and color, whose only function is to catch the eye, then plastic materials will be only a sales fad. If plastics are only used as bizarre imitations of old materials, the present trend is positively dangerous to the future of the industry. A great commercial artist here points out how his craft, aided and abetted by eager salesmen, have sinned against plastics. What he says has weight, for as the pioneer of industrial artistry, Joseph Sinel is justly famous for his work on behalf of such clients as RCA—Victor; Hoffman Beverages; Westinghouse; Texaco; Van Camp's, and Davis Welding. His expressive hand has reached out to plastic materials placing them, correctly, for the benefit of many industries—Schick Razor; Dictagraph; Acousticon.

WHEN the artist designs products for commercial production, two most interesting phases of his work are processes and materials. He must take into careful consideration the limitations and possibilities of both processes and materials. Every material has its limitations and of course plastics are no exception.

Plastics, however, offer a wealth of opportunities, of new possibilities unavailable to industry a few years ago.

Unfortunately, many so-called artists to industry are for the moment showing a complete lack of appreciation of the limitations and possibilities of these new materials. This is very effectively demonstrated by what is unfortunately getting to be a common abuse of cellophane, the chief advantage of which is its transparency. A new process of applying opaque pigment in a press is being used to declare a complete denial of the correct use of the material. The object wrapped in it is accordingly almost wholly concealed by printing on the transparent wrapping. Visibility, the chief reason for using cellophane, has been sacrificed to a misapplication of another new process, of the right uses of which the artist exhibits a complete ignorance. There are many plastic materials just as grievously sinned against.

Many manufacturers have gone away off on the wrong track on plastic product development in the past few years. In the field of plastic materials, we have gone absolutely wild by using them in imitation of existing materials and forms. This situation is due in great measure to the fact that the artist often enters industry through the sales department. Fundamentally he is necessary as a manufacturing assistant.

If industrial design is to be used merely as a new sales magic, we are due for many sad disappointments. The artist is needed in industry because we have arrived at a point where the machines can no longer produce the craftsman's forms. We are sorely in need of a rational machine aesthetics. Because of the division of labor in industry and the fact that most of our products are assemblies of different functional units—someone with the trained instinct and imagination of the artist is needed to integrate or coordinate these various units and give them a convincing form that is not merely acceptable and attractive but desirable and useful to the consumer.

The engineer has failed in this very necessary operation. If the artist is to do it, he must approach his task seriously and take full advantage of the wonderful scope for interesting, useful, and beautiful forms which plastic materials offer.

Lokombitsika

A Natural Resin Unknown to Us

By L. Wilson Greene

SEARCHING tirelessly for new raw materials the American plastics industry has apparently missed a natural wax of shellac-like properties which is being brought to European markets in increasing quantities. The exudation of an ant peculiar to Madagascar forms the "lokombitsika" of commerce. To call this product a wax is somewhat misleading. It is more on the order of a shellac, in fact it is generally termed white Madagascar shellac in France, and sometimes "loko." The crude product is deposited on the branches of forest trees by a species of ant insect (*Carteria lacca Signoret;* formerly *Gascardia madagascariensis*), much the same way as shellac is formed. The gathering and exporting of this commodity is principally confined to the province of Fort Dauphin in the southern part of Madagascar.

Through the kindness of the American Vice Consul at Tananarive the writer recently received a sample of lokombitsika. It consisted of dirty grayish and amber lumps ranging from small granules to pieces about one-half inch in diameter, together with considerable dust. Some straw and other extraneous matter were noted on visual examination and many lumps contained imbedded insect remains.

In 1924, the Bureau of Chemistry of the U. S. Department of Agriculture made an examination of the crude material and the following has been taken from a report of this work:

	Lokombitsika	*Shellac*
Saponification value	115.4	185 to 223
Acid value	60.8	40 to 70
Ester value	54.6	145 to 153
Iodine value (Hanus)	74.5	14 to 18
Soluble in cold absolute alcohol	57.1%	.....
Soluble in hot absolute alcohol	86.2%	.....
Soluble in ether	82.9%	.....
Soluble in benzene	88.3%	.....
Insoluble matter, about	3.7%	.....

The report also states that the material began to melt at 62° C. but was not completely fused until the temperature reached 80°. The loss in weight at 80° in a 150 mm. vacuum was about 8%.

A more recent investigation was carried out by Heim de Balsac, Dagand and Heim de Balsac [*Bull. agence gen. colonies 24*, 410-28 (1931)]. The crude lokombitsika had the following composition:

Resin (true shellac)	67.2%
Wax (ceryl formate and ceryl oleate)	12.0%
Inert polymerized material	14.1%
Extraneous matter	7.0%

The shellac was identical with the ordinary commercial grade from India.

These workers purified the crude material by boiling the under reflux with a solution of sodium carbonate and straining the hot solution through a fine wire screen to remove the polymerized and foreign matter. On cooling to 75° C., ceryl alcohol (resulting from the saponification of the wax esters) separated and was removed by filtration. The alkali was neutralized by cautious addition of a slight excess of hydrochloric acid, the flocculent precipitate thus formed being subsequently washed, dried and fused at 150°. Bleaching was readily carried out on the dried, unfused material by using sodium hypochlorite at 60°. Sulfur dioxide, sodium bisulfite or the latter in conjunction with potassium permanganate were unsatisfactory as bleaching agents. The purified material was found to be suitable as a substitute for shellac in its many uses.

As seen from the analysis, in chemical characteristics lokombitsika differs widely from shellac. From shellac, water extracts a deep red dye. A small amount of a yellow dye is extracted from lokombitsika. The film deposited on a glass plate from an alcoholic solution of the Madagascar product dries more slowly and without the characteristic tackiness of a freshly applied shellac film. Another point of difference lies in the superior water resistance of shellac, the lokombitsika film immersed in water becoming completely loosened in two days.

It would appear necessary, in order to obtain a commercially useful product from crude lokombitsika, to resort to the purification process recommended by the French investigators. However, where film characteristics are not so important and only a cheap gloss finish of some tenacity is desired the product might be of value. The writer has made a few experiments by preparing a 4 lb. cut in alcohol and straining off the foreign matter. After settling for a day or so an almost clear solution was obtained which produced films on close-grained wood and on tin which had fair gloss and fullness.

Lokombitsika seems to be a stranger in this country, although commercial quantities have been brought into France and Germany for several years.

Deformation in Laminated

Limitations and Tests Described by

E. E. Halls

SYNTHETIC resin varnished paper laminated boards is a popular insulating medium in the electrical and radio manufacturing industries. Under a variety of trade names, and in a number of grades the material is available. While offering in certain characteristics advantages over other well known insulating materials—ebonite, mica etc.—its use does not preclude the possibility of troubles arising.

A technique has to be developed, for example in fabricating processes such as blanking, guillotining, grinding, and so on, for the methods employed on other materials need adaptation or modification when applied to this synthetic product. However, it is to a characteristic which is not quite so apparent that attention is drawn, *i. e.* the capacity for the material to flow when subjected to pressure and temperatures slightly above normal.

Laminated gives no evidence at first sight of suffering permanent deformation, no obvious flexibility developing at elevated temperatures. There are instances in fact where this apparent immobility has proved to be disastrous, gradual flow occurring over a period of time under conditions of relatively high pressure and small temperature fluctuations. The notable instance of telephone relays may be cited in illustration. Owing to restriction of space and growth of telephone systems, relays in common with associated apparatus have to cope for greater service, as a result modification after modification has been made without any fundamental change in the basic design. Consequently, units which originally possessed say four make-and-break springs in the pile, now may embody as many as twelve. This involves greater clamping pressures for rigidity in both lateral and transverse directions. In order that the make-and-break may operate consistently at predetermined electrical pressures and within given time limits, it is essential that the insulators separating the springs remain permanent in dimensions in their capacity as spacers.

With the earlier types of smaller assemblages, little trouble was encountered, but with increase in overall thickness of pile-up, greater clamping pressures and operating temperatures, it is found that laminated synthetics yield gradually under these conditions and the constant repetition of spring movement. Pressure on the spring assembly gradually becomes reduced and springs fall out of adjustment at the contact extremities. This is in effect due to cold flow in the material, which may be seen by examining the insulators when the indentations by the metal springs are clearly apparent. Figure No. 1 shows diagrammatically the form of a typical relay spring pile-up.

Since the material initially was so satisfactory, it is perhaps a little disconcerting to the designer that it can apparently fail in similar applications. It is,

TABLE NO. 1

Test Results Demonstrating the Effect of Baking on Moisture and Water Absorption

Characteristics of 1/16" thickness Synthetic Resin Varnish Paper Board (Grade A Electrical Quality). Test samples 1½" square, edges finished smooth on fine emery papers.

Samples from Supplies of different origin	*Test Series A*		*Test Series B*	*Test Series C*
	Samples humidified for 96 hours at 35/40° C, 100% humidity	Samples baked for 96 hours at 125° C.	Samples baked for 1 hour at 125° C.	Samples baked for 96 hours at 125° C.
	Loss on Heating subsequently for 6 hours at 110° C.	**Regain on Humidifying** subsequently for 96 hours at 35° C/40° C.	**Gain on Water Immersion** subsequently for 24 hours at 20° C.	**Gain on Water Immersion** subsequently for 24 hours at 20° C.
No. 1 Natural color	2.6%	3.0%	2.0%	2.5%
No. 2 do	2.0%	3.0%	1.9%	2.4%
No. 3 do	1.5%	2.5%	1.4%	2.3%
No. 4 do	1.6%	2.7%	1.6%	2.1%
No. 5 Black color	1.5%	2.7%	1.5%	2.1%

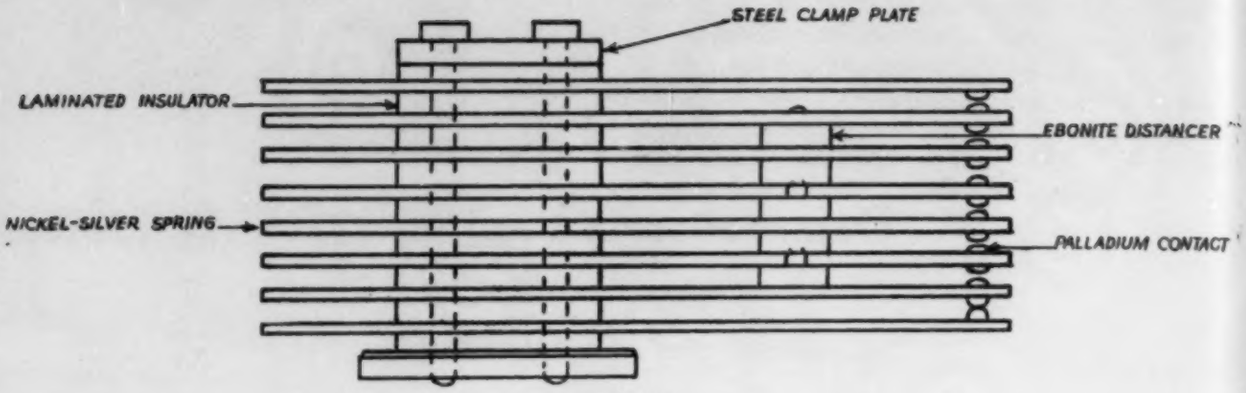


Figure I

therefore, well for him to appreciate its limitations, based on an understanding of the material. Laminated board is a product built up from sheets of paper impregnated in synthetic resin, the whole compressed into a solid mass by heat and pressure. The resin thereby becomes to a large extent converted or "cured" into an infusible and unsoluble modification. Both paper and resin constituents, it will obviously be agreed, will undergo deformation with pressure, and on the combination this flow will be accelerated by heat. Naturally, the rigidity of the material will vary in degree according to the proportions of resin and paper present, upon the extent of the cure, and to a lesser degree upon the quality of the paper base.

Various grades will be available, of which the three chief are described by their manufacturers as (a) good electrical quality with minimum of cold flow, (b) good electrical and punching quality, and (c) general utility grade. It is presumed that for the purpose under consideration only the first grade would be selected. In general, its choice would be determined by requirements based on the following tests, which the most generally involved thickness, viz. 1-16", is referred to, but in other thin sheets corresponding requirements could be specified:

(a) Percentage loss in weight on heating.
(b) Percentage gain in weight on water immersion.
(c) Beam test.
(d) Electrical tests for insulation, arcing, and breakdown strength.

Only the first three as routine tests have any bearing on the stability of the material under pressure. Tests (a) and (b) are an empirical measure of cure and of resin content, and they are performed on samples conditioned to a standard basis by 18 hours minimum in a controlled humid (75%) atmosphere at laboratory temperature. The heat test is six hours exposure at 110° C, and the immersion test 24 hours in distilled water at laboratory temperature.

Variation to be expected in the grade A electrical material, results on two supplies may be quoted, i. e. 0.95% and 1.25% loss on heating and 1.05% and 0.33% gain on water immersion respectively. These figures are far and away superior to those representative of other grades in this thickness, thus grades B and C would both yield values in the neighborhood of 2½% and 3½% on two tests respectively.

The beam test is not of a very positive nature, particularly on the thickness in question. It comprises a test piece 1" wide, supported on knife edges 1" apart, a load being applied centrally through a plunger of 1/16" radius at contact end. A minimum of 35 lbs. actual breaking load is specified to safeguard press-shop operations, but with the limitations imposed by tests (a) and (b) this load is rarely much exceeded. If it were, it would indicate a too plastic material.

Engineers experienced in these materials will realize at once that the test values quoted for tests (a) and (b) are exceptionally good. They represent the limitations of controlled commercial practice. The fetish of regarding the magnitude of the values as a true measure of quality and cure, prompted by a

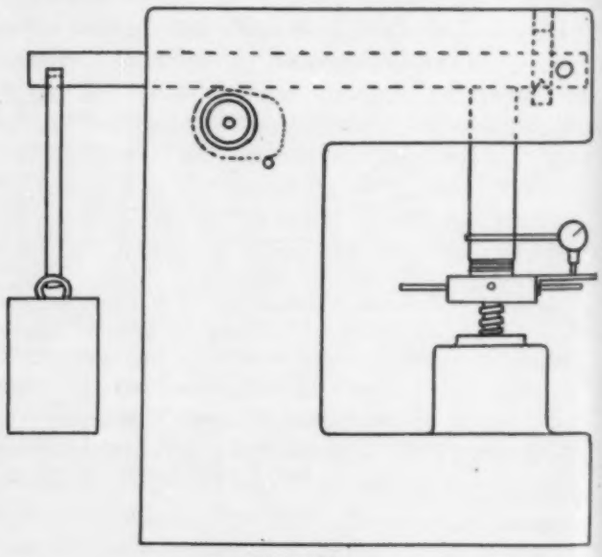


Figure II

quest for the rigidly ideal, has led to the misapplied practice of baking this class of insulator under the impression that it is possible to complete the process of manufacture which it is impossible for the supplier to achieve on large sheets. Material treated in this manner and retested immediately shows reduced loss on heating, but in general the tendency is for in-

creased gain on water immersion, particularly after prolonged heating processes. Also, extended heating may logically be expected to cause deterioration of the paper base with always the danger of friability causing abrupt failure at a later date. As an illustration, Table No. 1 shows data accumulated over a period depicting the effect of such treatments on a range of 1/16" thickness materials of various origin.

Table No. 2

Reduction in Thickness of Assembled Insulators

Series No.	*Condition*	*Overall Dimensions Inches*	*Overall Contraction Inches*
1.	(a) Unbaked insulators, pile-up assembled and tightened.	0.9610	
	(b) After first operation and re-tightening.....	0.9585	0.0025
	(c) After second operation and retightening.....	0.9565	0.0020
2.	(a) Unbaked insulators, pile-up as assembled and tightened	0.9640	
	(b) After baking and retightening.....	0.9610	0.0030
	(c) After operating and retightening.....	0.9592	0.0018
3.	(a) Baked insulators, pile-up as assembled and tightened...	0.9625	
	(b) After operating and retightening.....	0.9610	0.0015

Reverting to the real problem of plastic flow, this can be indicated numerically by means of dimensional data taken from spring pile-ups submitted to various treatments. A number of these pile-ups screwed together at a pressure of 9.5 tons per square inch were accurately measured in overall thickness over clamp plates, and then operated continuously for a period representing six months' service conditions. They were then re-tightened at the same pressure and remeasured. Again, they were similarly operated, re-tightened and remeasured. The thicknesses and reduction are given in Table No. 2.

In a second series of tests, a number of pile-ups were tightened, measured, and baked for 24 hours at 140° F., retightened and remeasured. They were then operated as above, retightened and remeasured. These figures are also given in table No. 2.

A final series comprised the use of baked insulators for the initial assembly, measurements being taken before and after operating, tightening pressures being as above. The insulator baking temperature in this final series was 220-230° F and period 24 hours, this being the maximum safe temperature for treatment in practice without distortion or blistering.

To determine extent of plastic flow under conditions of temperature and pressure, either on raw material or on insulator parts, a number of thicknesses are clamped together in a fixture and brought to the desired temperature in a suitable hot air enclosure. The pressure is then applied. The arrangement of the fixture is shown in Fig. No. 2, and it comprises an anvil, a flat ended plunger resting on the specimens, a slow acting cam for operation during initial stages of gradual application of load, and a gauge fixed to plunger for indicating decrease in height.

The curves in Fig. 3 indicate the behavior to be expected from grade A electrical material before and

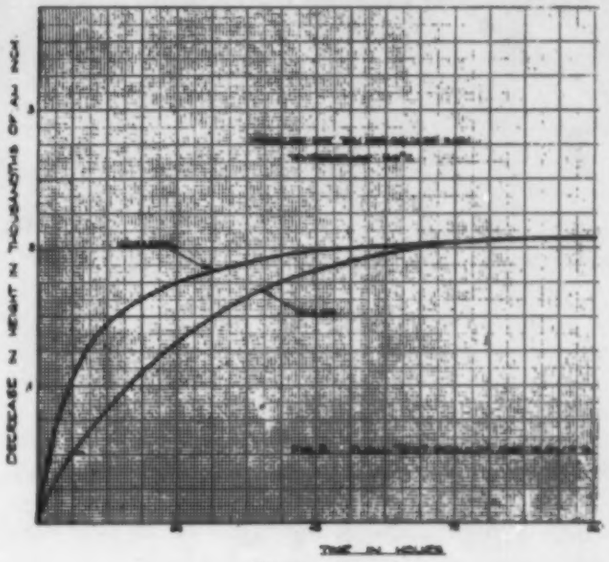


Figure III

after the baking treatment referred to above. The path of these curves suggests that laminated is not a rigidly stable material under heavy pressure and that the baking treatment merely retards the initial rate of compressive flow In practice the magnitude of this effect can be minimized by assembling and heating before tightening, the latter then being performed under controlled pressure while still hot.

The relay spring assembly that forms the basis of illustration in this article is by no means the sole example to which the problem applies. Parallel cases will be recognized in the various branches of heavy electrical, radio and domestic appliances industries. The point to be realized is that plastic laminated material will flow under the conditions described. Any attempt to obviate this by producing a board in which the defect is materially absent will simultaneously introduce increased fabrication troubles in blanking and piercing. Designers must recognize that a compromise has to be effected, and must not overlook the natural limitations of the material with which they are dealing.

Bakelite Impregnation of Fossil Bones

A unique interesting use for Bakelite is suggested in the preservation of fossil bones. A number of materials, including paraffin wax and shellac, have been used for impregnating such bones, but a more satisfactory method has now been developed with Bakelite. Broken bones are cemented with a mixture of plaster of Paris and dextrin, and then lowered into a tank of Bakelite made sufficiently fluid by the addition of a thinner. The bones are then allowed to dry and the surface cleaned.

The New Plastic from Rubber

"ESPECIALLY unique" was the characterization of Goodyear's new thermoplastic molding material "Plioform" by PLASTIC PRODUCTS' observer, while attending a private pre-view of the company's display of finished articles at Akron.

"Not only unique, but something new, not a copy, nor a duplication, but a contribution to art as well as a distinct forward step in scientific advancement."

A molded plastic from rubber: Plioform, requiring no vulcanization, utilizing only heat and pressure to accomplish its purpose—a true plastic in every sense of the word. This most interesting product is made of pure pale crepe rubber, but unlike any molding types of hard rubber contains no sulfur and hence renders a vulcanization step superfluous. It lends itself to any shade of color. It offers the acid and alkali resistance of the raw material. Its coefficient of thermal expansion is low and its surface resistivity to electrical current is very high. Its moisture absorption is considerably under that of most materials available. Plioform is tasteless and odorless and fairly resistant to scratches. It is also "unbreakable" in the same sense as most high grade plastics. Plioform also has qualities such as resistance to hot water and discolorization by sunlight or age which make it particularly well suited for fabricating novelties.

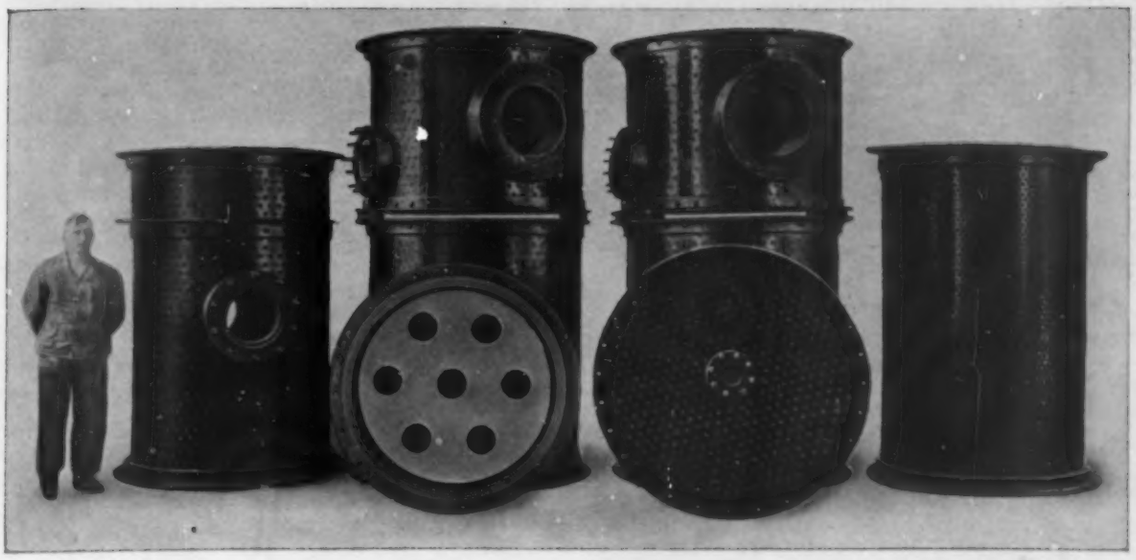
The physical properties of Plioform are given in the following table by the Goodyear staff:

Tensile strength	4,000-5,000
Compressive strength	8,500-11,000
Transverse strength	7,000-9,000
Specific Gravity	1.06-1.29
Water Absorption 24 hour immersion	0.02% to 0.1%
Molding temperature	260-280° F.
Acid Resistance strong acid	O. K. Except nitric
Alkali Resistance	O. K.
Light Resistance Discoloration	Good
Surface resistivity	1×10^{11} @ 90% H.
Ohms per linear inch	1×10^{12} @ 75% H.

The bulking factor of Plioform ready for the mold is in the neighborhood of 2.5 to 1 and it can be made into pre-forms if desired. It is best worked in molds which are channeled for rapid heating and rapid cooling. Chromium plated molds give an excellent glossy finish to the molded article and stand up well under usage. In order to keep the properties of the product at a maximum no lubricant is used in compounding Plioform, and in smooth molds no trouble with stocking is encountered, but if such trouble should come up, carnauba wax is an effective mold lubricant. In solution in benzol or gasoline the clear resin can be used for impregnating fabric, paper, etc. It is also useful as an adhesive for sticking plastic to wood.

Plioform is offered in all colors, in translucent, and in transparent form. Perhaps the most interesting effects are those resembling the metals, particularly copper and brass. The mottled green effect of "weathered" copper is specially beautiful, as are also the pearl-essence shades. It comes in soft, regular, and hard grades, the regular grade being most suitable for all-purpose molding.

Plates molded of Plioform in metallic copper color, mother of pearl effect—a unique combination of great merit.



From 10 ft. Vat to 1 in. Pipe

New Phenolic - Asbestos Plastic for Chemical Resistant Apparatus

THE new German phenol-formaldehyde resin-asbestos compound Haveg is the result of ten years of intensive research. In 1922, a company was formed in Germany, Saureschutz Gesellschaft, to develop materials which afford protection against acid conditions. In 1925, a special phenolic-formaldehyde resin was found that could be combined intimately with acid-resisting asbestos into a homogeneous mass which could be molded into almost any conceivable shape and fitted into reaction chambers, tanks, dyeing equipment, special equipment, etc. On January 15, the Haveg Corporation, formed in America to manufacture this revolutionary protective coating, opened its plant at Newark, Delaware.

The method of application is relatively simple. The asbestos-resin compound after thorough mixing is placed in the desired molds, and subjected to heat and pressure to form it into a single, solid piece of the shape or size required. Up to the present time one piece seamless tanks have been made as large as ten feet in diameter and ten feet in height. By combining units of an easily handled size almost any type or size of installation may be secured.

A short resume of the outstanding chemical and physical properties of this new addition to the molded plastics field discloses many interesting possibilities for utilization. It is a light weight material (specific gravity 1.6 or one-fifth the weight of iron); it stands blows or shocks, and does not chip or fracture easily; it has a compressive strength of about 10,400 pounds per square inch and a bending strength of 5,600 pounds per square inch. Regular grades can be used up to 130° C. (265° F.) without any effect from continued use at such elevated temperatures. It is completely indifferent to rapid changes of temperature, and, accordingly, will not crack from sudden exposure to, or alternate use of, high and low temperatures.

Haveg is said to have good tensile strength, and machines well in cutting, drilling, sawing, turning etc. It has a low coefficient of heat conductivity which means economy in steam consumption. Surface damage is of little or no importance as the material, of course, possesses uniform chemical

Above—40 ft. reaction tower assembly of Haveg and perforated sheet steel jacket—Below—Pipes are made either of Haveg or Haveg reinforced with iron shell.

Chemical reaction chambers constructed with Haveg protection are proving of special value by reducing replacement costs, by preventing contamination of products in process and by permitting use of cheaper materials of construction. Haveg offers interesting possibilities wherever chemical corrosion is a problem, small items of equipment as well as large.

resistance throughout. Cleaning of equipment is specially easy where this corrosion resisting plastic material has been used. The following data, supplied by the manufacturer, indicates the chemical resistance of Haveg:

Acids

Acetic, any conc.	Oxalic, any conc.
Fatty Acids	Phosphoric, any conc.
Formic, up to 40%	Sulfuric, up to 50%
Hydrochloric, any conc. and temp.	Sulfurous
	Tannic
Hydrobromic, any conc.	Tartaric
Lactic . " "	

Bases

Ammonia	Potassium Carbonate
Caustic Lime	Sodium Carbonate
Neutral Soap Solutions	Sodium Sulfide (Alk. Free)
Phosphates	

Solvents

Alcohol	Oils
Carbon Tetrachloride	Petroleum
Ethylene Chlorhydrin	Trichlorethylene
Hydrocarbons	

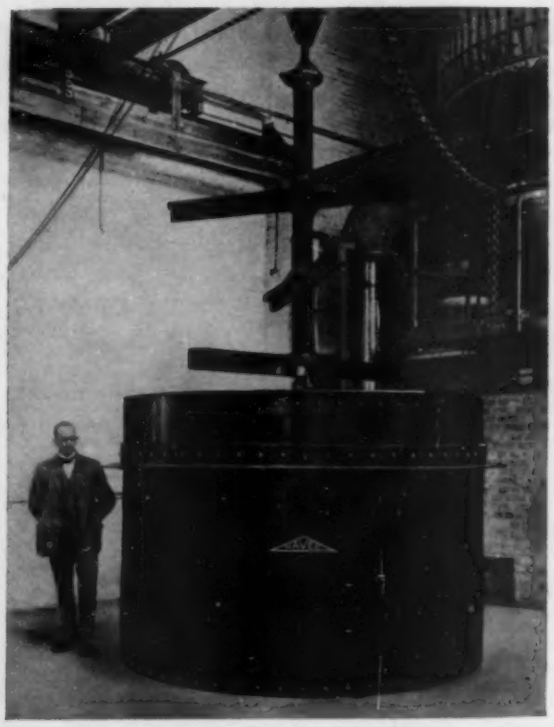
Salts and Other Chemicals

Aluminum Acetate	Ferrous Chloride
" Chloride	Ferrous Amm. Citrate
" Oxalate	Hydrogen Peroxide
" Sulfate	Hydrogen Sulfide
Ammonia	Magnesium Chloride
Ammonium Sulfate	Manganese Sulfate
Aniline Salts	Milk of Lime
Benzine Soaps	Oxalates
Calcium Chloride	Paraffin
Calcium Hypochlorite	Potassium Iodide
Carbonated Waters	Sulfur, molten
Chlorine	Sulfur Monochloride
Chlorine Water, Saturated	Sulfuretted Hydrogen
Chloride of Lime Solutions	Sodium Peroxide Solutions
Copper Sulfate	Water Glass
Ferric Chloride	Zinc Chloride
Hydrofluoric Acid	Fluorides
Fluosilicic Acid	Fluosilicates
Hydrofluoric Acid Mixtures	Fluorine Compounds

Haveg is not resistant to:

Acetone	Potassium Hydroxide
Chromic Acid in Higher Concentrations	Sodium Hydroxide
	Sodium Hypochlorite
Nitric Acid	Sulfuric Acid, hot Concentrated
Organic Bases, as Pyridine	

The producer points out that some chemicals such as toluol, glacial acetic acid, etc., cause a slight swelling but that this phenomenon is of very little practical importance in most instances. Further, the material is not resistant to oxidizing acids such as nitric, hot concentrated sulfuric or the higher concentrations of chromic acid. It is also attacked by sodium and potassium hydroxides and organic bases such as pyridine, and by acetone. Work is now being carried on in attempts to devise formulas that will render the product impervious to attack from alkalies. The manufacturer suggests that although some materials such as aniline, bromine, and iodine have some effect on the new plastic, the material may be adopted for use in processes using these chemicals by a suitable arrangement of the processes. For example, in the making of aniline salts if the vessel first receives the charge of hydrochloric acid, the succeeding reaction will have no effect on the plastic lining. The com-



Above, a large mixing tank made of Haveg reinforced with an iron shell. The agitator shown is of solid Haveg. Installations of Haveg have been made in such representative processes as—manufacture of organic and inorganic dyes and their intermediates, pharmaceutical preparations, fertilizers, silk, rayon, textiles, etc.

plete resistance offered against muriatic acid under any conditions of temperature and concentration will suggest to chemists many possibilities where reactions may be performed quickly and more efficiently with muriatic than with sulfuric but where until now the latter was used simply because of the lack of suitable material sufficiently resistant to the corrosive action of muriatic acid.

The high strength, toughness and durability of Haveg simplifies the problem of construction. In a great many instances no metal reinforcement is necessary. Where it is, iron or some other metal may be used, and is usually incorporated directly within the molded mass since the plastic makes a very strong bond with metals.

Dr. Leback, technician of the German firm has been ten weeks in this country, supervising the initial operation of the Delaware plant and consulting with American firms who contemplate using this new plastic.

A NEW Plastic-Impregnated CLOTH

FOLLOWING the success of the Drybak Band Aid, a waterproof surgical dressing, first put on the market a year ago, a similar process with some slight variations has been adapted for the manufacture of a flexible waterproof fabric. The cloth, to be known as Revolite, is treated with a special flexible phenolic resinoid material, which renders it resistant to water, oil, and most cleaning compounds. Further research and progress has made it available in a variety of metallic finishes, patent leather, and printed effects; and it may be had in different weights of cloth.

The material drapes gracefully, irons easily, and does not deteriorate with age. Because of its outstanding characteristics—flexibility and waterproof resistance—it is especially adaptable for use in many directions. For instance, shower curtains that will not stiffen with age, nor collect mold, and which will withstand soapy water; brightly colored raincoats, and golf jackets that can be rolled up and tucked away in a valise. For milady it has come to the rescue of evening slippers in gold, silver, or copper colors—slippers that can be cleaned by wiping with a damp rag.

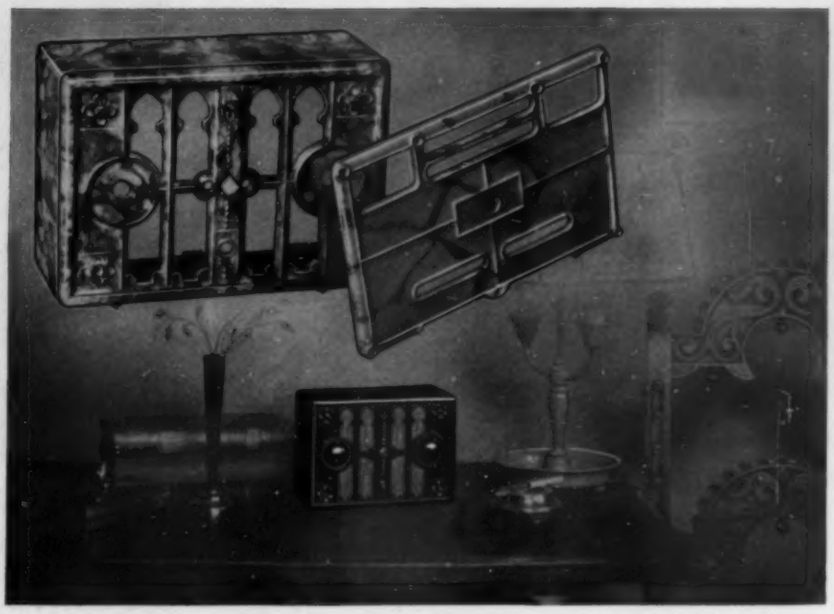
Equally at home in the household this unusual material has many advantages. To name but a few—draperies, curtains, wall coverings, bridge table covers, shelf covers, decorative screens, table runners. Going a step further brings us into the theatre where striking effects may be obtained in stage settings, not only for the legitimate stage but for the motion picture studios as well.

It has also found commercial application as an effective lining for boxes, especially silverware and gift boxes. When flexible waterproof characteristics are required, or brilliant metallic and printed effects are desired Revolite is said to offer especial advantages, not only from the point of view of practical needs but also from that of economy. Revolite is manufactured by the Revolite Corporation, a subsidiary of Johnson & Johnson Co., the well known surgical supplies house which perfected the similar product Drybak Band Aid.

MANUFACTURERS who have re-designed their product or its packaging, to the use of Plastic Molded Parts are enjoying an increase in sales and profits, even in these lean years. There is an appealing beauty, a rich warmth of color in Plastic Molded Parts that gives to a product irresistible eye and sales appeal. This is a good time for *you* to give careful consideration to the use of Plastic Molding as a means of modernizing your product and so increasing its sale.

We are Molders of

BAKELITE
PLASKON
DUREZ
BEETLE

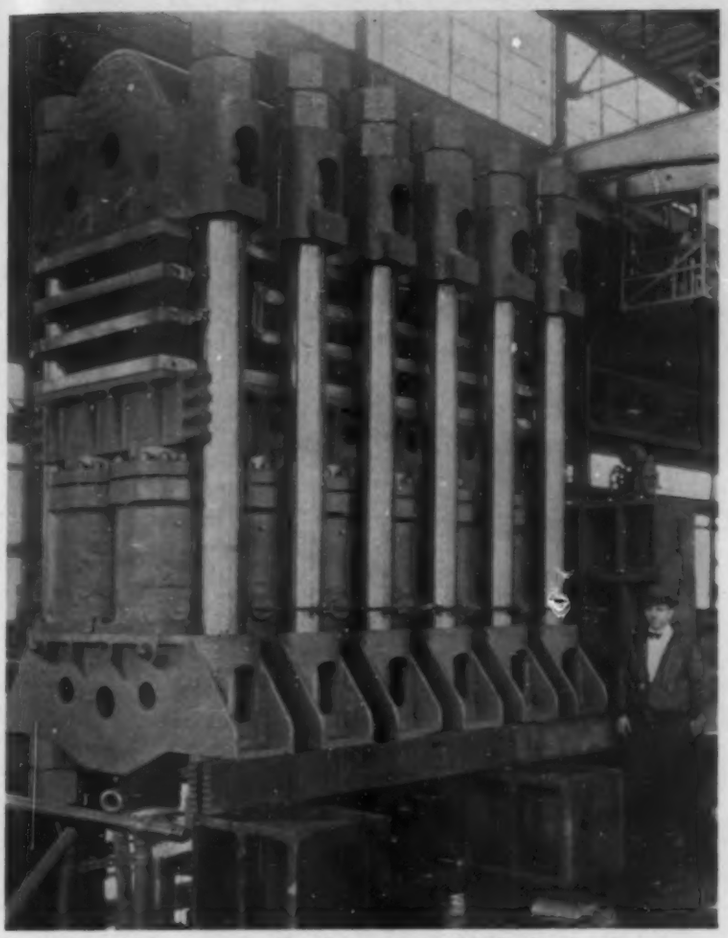


Many Plastic Molded Products that are now enjoying outstanding sales success were designed, engineered and molded in our plant. Our Merchandising, Designing and Engineering Departments are ready to help you in your sales problems. Write for suggestions. Our free booklet, "The Story of Bakelite Molded Parts" mailed on request.

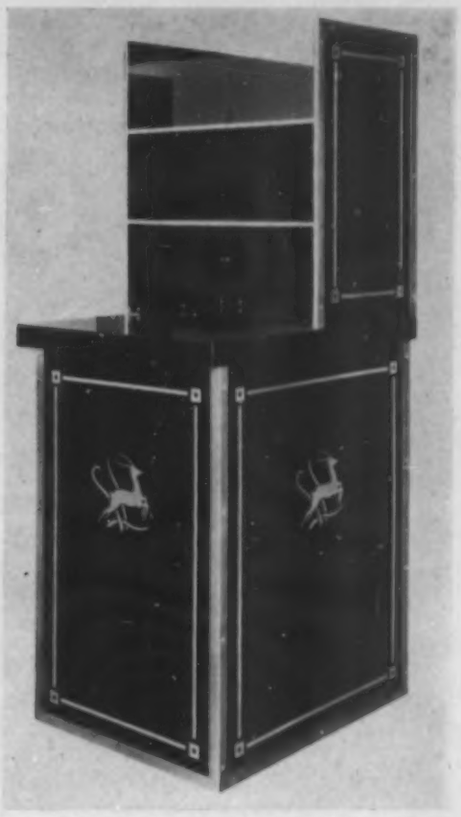
CHICAGO MOLDED PRODUCTS CORP.

2146 Walnut St. **Chicago, Ill.**

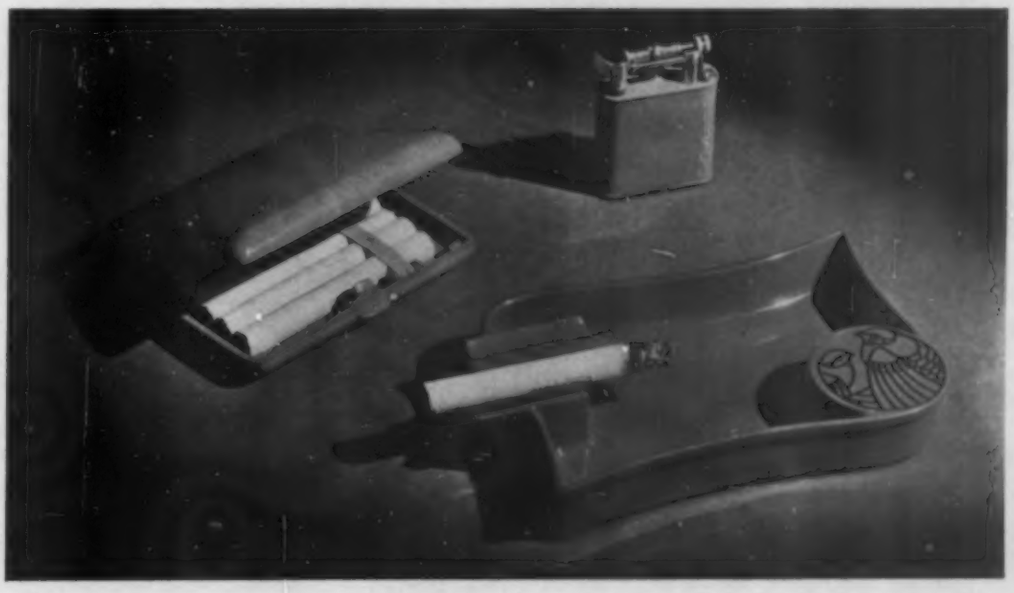
Plastics in Pictures



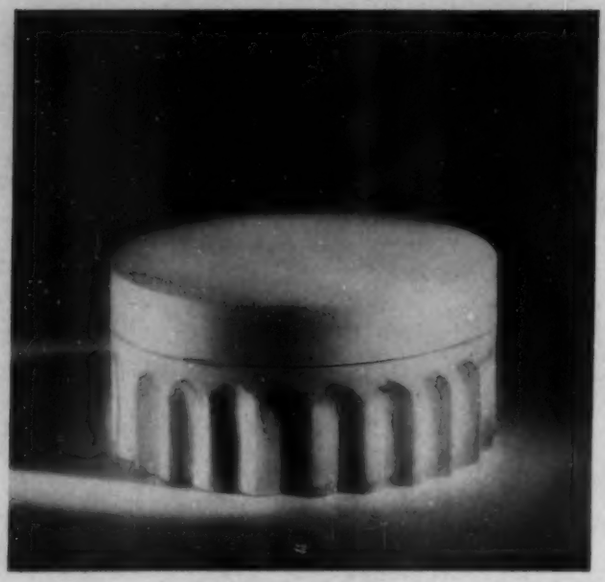
Presenting—the largest steam platen press ever built! Designed and constructed by the Lake Erie Engineering Company, the press applies pressure of 20,000,000 pounds by means of twelve 18" rams at 6,500 pounds per square inch. The plates are 48" x 144", and no deflection was found to be more than .004" under actual working conditions. Yes, these figures are correct!



It's a water cooler! But jet black Formica makes it attractive; no longer an eyesore to customers of the Waldorf Restaurant chain, where these are now in general use. The laminated material is stunningly decorated with lacquered aluminum inlay.

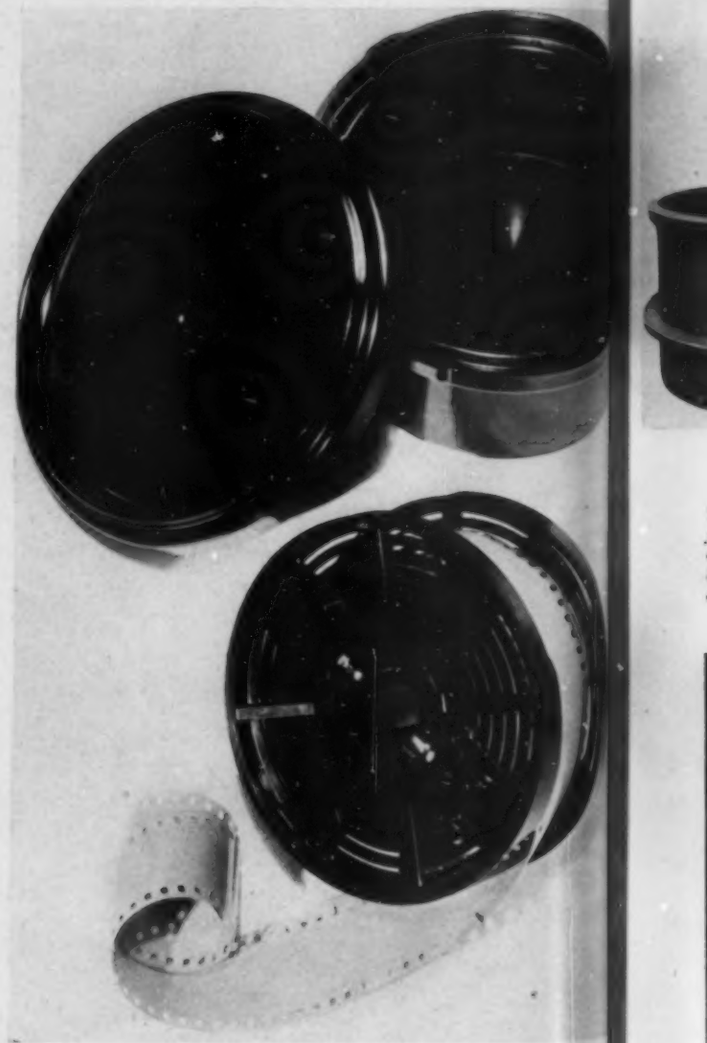


These smokers' articles are in complete harmony, attractive enough for feminine tastes and strong enough for a man's use. Winkel and Schulte, their manufacturers, found the ideal material in colored Bakelite molded.



A cosmetic jar idea worked out by the Industrial Design Corporation for General Plastics Inc. Molded materials are readily adaptable to the severity of the design so necessary in meeting modern trend.

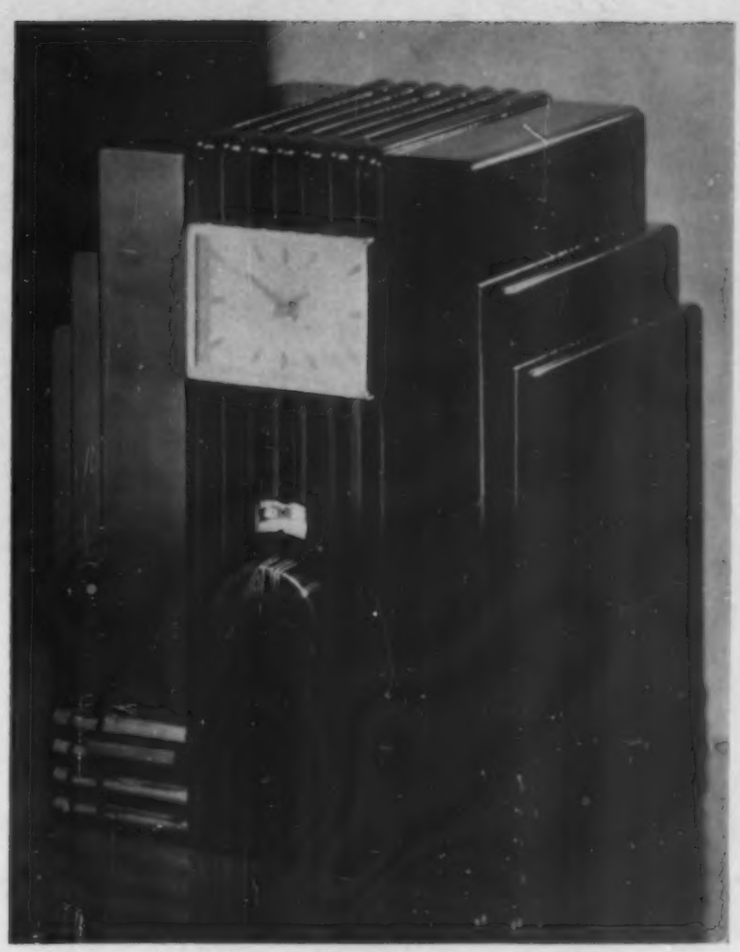
The pyramid design, employed in this molded flower pot, makes it harmonize with any decorative treatment, and the bright scarlet Bakelite provides an attractive finish and a resistance to moisture. More durable than clay, and more beautiful!



A highly resistant black Durez molding compound has been u this new film container recently exhibited by the National M of Art and Industry at the Art Center Building, New York C provides a durable moisture proof container for those precious of Celluloid.

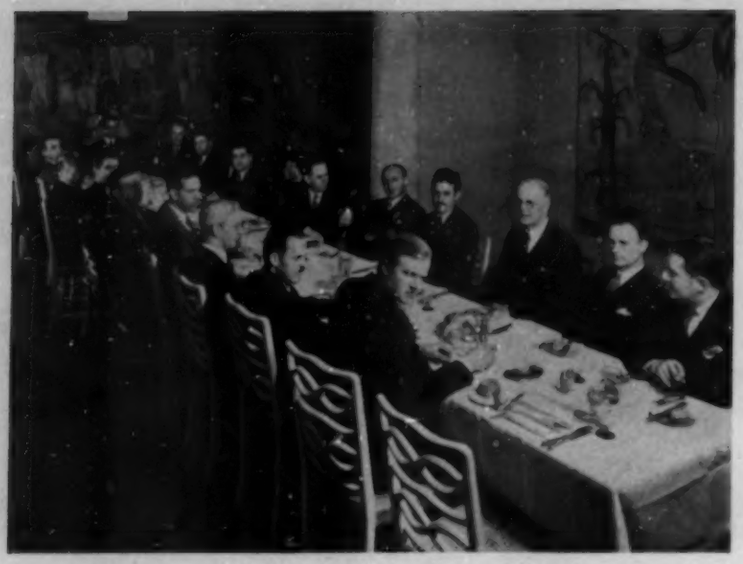
Molded plastic compacts and vanities —a 1933 innovation. This new pancake type powder compact recently released by Van Tine's, achieves color, light weight and a permanent scratch-proof surface in one simple low-cost operation by the use of various plastic materials. An unbreakable mirror is another feature. The compact in the foreground is molded by Norton Laboratories of black Durez, while the one at the right has a magenta base.

A revolutionary idea in the battle against corrosion is "Haveg" a combination of acid resisting asbestos and a specially prepared acid resisting resin of the phenol-formaldehyde type. The homogeneous mass is molded in all shapes and forms. Fitted into chemical reaction vessels, such as the one shown below, the ravages of acid corrosion are halted and the life of the equipment lengthened considerably. "Haveg" is a German product, and a factory for its manufacture in this country was opened at Newark, Del. on January 15.



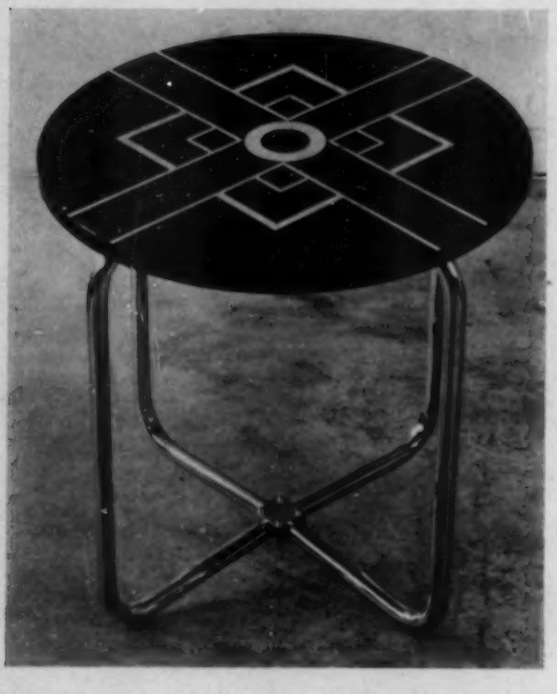
This new midget radio and clock combination, recently exhibited at the Art Center, was designed by Van Doren & Reideuot for the Air-King Products Company. Plaskon material is used throughout to meet the demand for more color in midget sets, although the one illustrated is finished in lustrous black.

The native on the right is recovering sap used in the manufacture of Japanese Lacquers, and seems to be no respecter of cemeteries. Below, we follow the process of the natural lac gum through its evaporation stage,—a process almost as old as the Country.



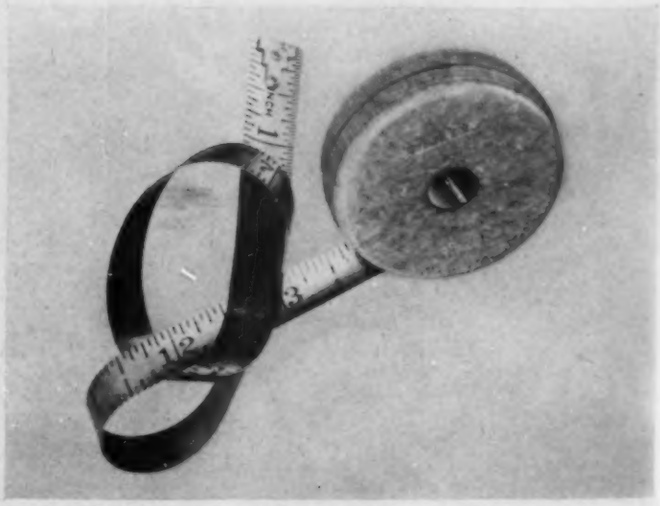
Not long since, Bakelite Corporation held a conference with some of the leading designers of the country to discuss the trend toward better design in industry. Among those who attended this meeting, illustrated above, were Helen Dryden, Gustav Jensen, Norman Bel Geddes, Lurelle Guild, John Vassos, Joseph Sinel, Lucien Bernhard, Donald Deskey, George Switzer, and Simon de Vaulchier. Others who were also present, but not in the photograph, were Henry Dreyfus and George Sakier.

A highly water resistant material was needed for the cover and plug of this DeVilbis Vaporizer. By using a special Durez compound the Moto-Meter Gauge and Equipment Company, molders, met this severe test.



This modernistic card table again shows the adaptability of metal inlays. Copper and silver was used in the decoration, afterwards lacquered, and the base material is laminated Micarta. Neither beverages or disgruntled partners can harm its surface!

In introducing the "Push-Pull" Rule, the Stanley Works wanted a case both tough and resilient without destroying the decorative effect. Molded by the Northern Industrial Chemical Company, this was achieved by the use of Lumarith, a cellulose acetate compound.



Announcing and outlining
a great series of articles

An Introduction to

COATINGS

By Bradford S. Covell

COATINGS are those liquid or semi-liquid organic materials used to cover the surface of metal, wood, leather, paper, or other materials, for the purpose of protection, decoration, or to change the basic properties of the object so coated.

This is a broad definition. The term "coatings" so defined covers a great deal of ground. It is not too broad a definition, however, to describe the far-reaching field, the variety of materials employed, and the many classes of articles to which coatings are applied.

It is proposed to cover the subject in a series of articles appearing monthly in PLASTIC PRODUCTS in which this important class of materials will be presented from a different angle than has heretofore been used. We will attempt to describe coatings from the viewpoint not of the shop foreman who actually coats the articles, nor of the paint chemist who compounds the coatings, nor even entirely from the viewpoint of the factory manager or superintendent whose main concern is the effect achieved and the cost.

We hope to present the subject in such a way as to interest all those mentioned, but in addition to point out the essential differences between the great number and types of different coating materials available. We will attempt to show to what types of articles and in what manner these basically different coating materials should be applied. These articles should be of assistance to all manufacturers whose product is coated in helping them make an intelligent choice of the multitude of coating materials available in order to fulfill their particular requirements. With this better understanding of coatings they may talk more intelligently with coatings salesmen in their language, who in turn should be able to serve their customers better and with greater cooperation. At present a great gap often exists between the representative of the coating manufacturer and the prospective buyer. This is especially true in the smaller organizations which do not maintain a technical staff.

An example of one effect of this unintentional lack of coordination and mutual understanding is evidenced in the large number of promiscuous samples received by most concerns in the coating business. Properly to test and report promptly on all of these samples would be a sizable laboratory task and many never see the inside of a spray gun. The yearly aggregate of such samples must run into appreciable amounts of time, trouble and money to the coatings manufacturer. With a better understanding of their own requirements, based on a fundamental, general knowledge of properties of the various types of coatings, definite requests for specific types of samples would result advantageously, we believe, to both the manufacturer, and the prospective customer.

In these articles it is planned to touch on the historical aspects of the ancient art of

A practical, authoritative, highly interesting discussion of modern coating materials and their specific uses and methods of application is assured the readers of Plastic Products because of the distinguished expert who will write this important series of articles. Bradford S. Covell—trained at Yale and Columbia and served in the A. E. F. during the war—is chief chemist of the Patent Button Co., and has behind him years of plant and research experience gained with the Boonton Rubber Mfg. Co., Westinghouse, and the Arthur D. Little laboratories.

coating and to trace the development of the materials from the earliest asphalt and oil-gum varnishes down to the present-day nitrocellulose and oil-less varnishes and enamels. We will then endeavor to show how the various active major groups are related in application and properties and finally take up each group in detail. It is planned also to touch on the various means of application such as spraying, tumbling, centrifuging, etc. by which coatings may be applied to various types of articles.

Our task is a formidable one. No one person or group of persons can hope to know all sides and ramifications of such a vast subject. Coatings, both in their compounding and application, are becoming more and more of a science, but are still very much an art. As in any other art, personal opinions count for much and may be strong and prejudicial. In the coatings field the same excellent result may sometimes be achieved by two entirely different methods. This does not mean that either is wrong but merely that both are good.

Now, when so many new and interesting coating materials are being developed and when the whole coating industry has at its disposal so many different materials, this is an opportune time to attempt to clarify the whole matter by a survey of the field. Coating manufacturers are, as a class, too far ahead of the users of the coating materials in general knowledge of the subject due primarily to the host of new developments in the past decade.

It is with the hope that some slight contribution may be made towards an increase in general knowledge of coatings from the viewpoint of the user, rather than the manufacturer, that PLASTIC PRODUCTS believes such a series of articles as these would be desirable.

Development of Du Pont PX Cloth

Over a period of years, the use of long-wearing and washable Fabrikoid on high-grade books had built up a need for a product of these qualities at a price that would permit of its use on the $2.50 trade books, the fiction best sellers, and 100,000,000 textbooks used in the United States every year.

The problem turned over to the laboratory staff at Newburgh was a knotty one. Narrow profit margins, lower book prices, made it essential that the new product should be in the price range of a high-grade book cloth.

Another complication was the requirement that the material must have, to as great a degree as possible, Fabrikoid's major properties.

Nor was that all. It must conform entirely to the best bindery practice. Binders were accustomed to do ink stamping and gold stamping work with high-speed apparatus.

To be acceptable to the market, this processed cloth must wear as well, handle as well as other materials in general use, be in the same price range, and yet offer marked advantages over them.

The finished material must be water-repellent and cleanable, two of Fabrikoid's properties. Making it cleanable was highly important, for that would automatically make it a first choice by school boards who buy millions of textbooks each year.

Another advantage was that publishers would be able to specify lighter colors for the sake of salability, something not possible with easily soiled, non-cleanable covers previously in use.

Building the product began with the selection of a high-grade piece of base fabric, higher in thread count than the base fabrics ordinarily used. The term refers to the number of threads to the inch, both ways, and is a factor in determining tensile strength.

Chemists working on the project found the job of making the cover material water-repellent a relatively simple one. Some of them had spent half a life-time making fabrics water-proof. But that was only one phase of the problem. Chemists and physicists tackled the assignment, made up experimental lots by the scores, and tested them, and after months of work, marked by many failures, learned how to make a processed fabric conformable with specifications.

PX Cloth is water repellent and cleanable, two characteristics which claim for it extensive use by many book publishers

Hard Rubber vs. Synthetic Resins

Synthetic resins are extensively displacing hard rubber for molded articles in both old and new applications.

As a matter of fact hard rubber is seriously handicapped on the score of its color limitations, slow vulcanization, lack of mold finish, etc. Hard rubber is paramount as an electrical insulator for certain purposes, also as tank covering, pipes, etc., for protection of industrial apparatus against corrosive liquids, fumes, and gases. Hard rubber is rapidly being eliminated from the molded plastic field of utilities by the development of synthetic resin molding powders.

The beauty of synthetic resin moldings is that they leave the mold with a bright, polished finish; shrinkage or distortion is negligible, and little finishing is required. Ebonite moldings require buffing and polishing and, consequently, cannot compete with the resin as regards finish or cost of production. Resin moldings have one minor defect; they are more brittle than good class ebonite, but in certain articles this fault is of little importance.

Recent improvements have been made by introducing fibrous material into the resins, thus rendering them shock resisting.

In the following table the properties of phenol-formaldehyde resins and ebonite are tabulated:

	Phenol Formaldehyde Resin	*Ebonite*
Specific gravity	1.30 to 1.50	1.15 to 1.30.
Colors	Practically all except white.	Black, brown, and red.
Finish	Excellent from mold. Requires no polishing.	Matt finish from mold. Requires polishing.
Di-electric strength (volts per mil.)	600.	1,000—1,200.
Tensile strength (lbs. to sq. in.)	2,000—6,000.	1,500—10,000.
Compressive strength (lbs. to sq. in.)	24,000—30,000.	2,000—5,000.
Effect of aging	None, if properly hardened.	Tends to discolor. Depends on state of cure.
Water absorption	Up to 2%. Depends on cure.	Very slight. Varies according to ingredients used.
Heat resistance	250—270° C.	Best ebonite 90°C. Specially compounded 150° C.
Oil resistance Mineral.	Practically unaffected.	Softens slightly.
Vegetable	Practically unaffected.	Unaffected.
Alkali	Slight effect.	Unaffected.
Acids		
Strong	Decomposed	Slight effect.
Weak	Slight effect.	Unaffected.
Metallic inserts	Unaffected generally	May corrode in time.
Machining	Fair. Tends to be brittle.	Fair to excellent, depending on pigments.
Time and temperature of cure	2 to 10 min. at 275° C., according to thickness.	20 to 120 min. at 190°C., according to quality and thickness.
Surface insulation, ¼" distance on test piece	10,000 megohms to infinity.	100,000 megohms to infinity.
Molding tolerance	0.005 per inch.	0.020 per inch.
Brinell hardness	40—50.	70—90.

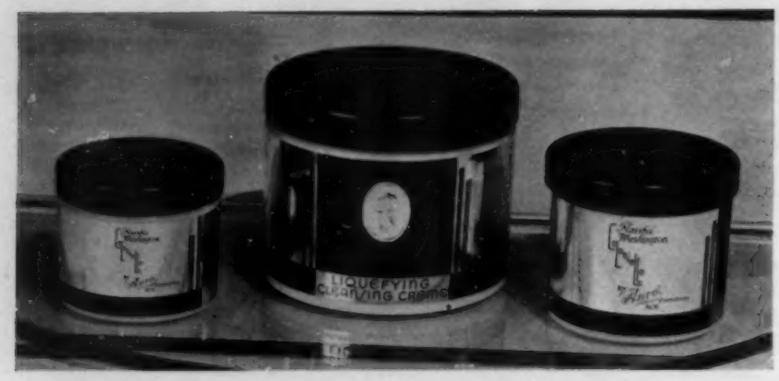
Laminated products, such as paper or fibrous materials, impregnated with liquid synthetic resins, pressed and hardened under heat, are also now competing with ebonite, and, as these can be produced in beautiful colors and effects, this competition is likely to become more severe in the future.

If hard rubber is to hold its own against synthetic resin moldings, it is essential that it be produced in competitive bright colors, resist surface deterioration, cure in less time to meet competitive cost of resin molding, and produce finished objects which are polished from the mold.—*India Rubber World.*

New Plastic Packages

Selected by the Editor of "Drug & Cosmetic Industries" as outstanding novelties in the toiletries field

Pearl grey and brilliant emerald green is the striking color combination of this new package for "Ab-Scent" the deodorant offered by Jean Jordeau, Inc.



The rich glossy black of the molded tops of these attractive jars contrast effectively with the brilliant modernesque labels, an eye-catching combination that is building sales for this beauty treatment line recently added to the Colonielle products of Anre, New York.

Two new shades of face powder introduced by Kathleen Mary Quinlan are packaged in the "Poudre de Pearle" glass jar with black plastic, metallic scroll design tops.

Scarlet and white and black and gold are the colors of the two sizes of the new package for the new "Flossy Deodor Stick" being introduced by Kimm-Libbey, Ltd.

Plastics in the News

Packaging Exhibit Well Attended—Curme Chandler Medalist—1931 Resin Figures—Archer Daniels Offers Lacquer Linseed Oil—Du Pont Sues Sylvania—Boonton Rubber Sale.

Hotel Pennsylvania's ballroom was transformed into a series of small drug, perfumery, cosmetic, grocery and confectionery shops—a Rue de L'Paix, in miniature—on March 7 as the Packaging, Packing, and Shipping Conference, Clinic and Exposition opened before a large and enthusiastic audience. In the molded plastic field Bakelite and General Plastics were the sole exhibitors. However, Celluloid showed "Protectoid"—a non-inflammable, non-shrinking transparent wrapping—for the first time, and du Pont Cellophane and Sylvania also had striking examples of "Cellophane" and "Sylphrap" respectively on display.

General Plastics (Durez) turned to the extreme modern *motif* in its background of blue and golden open shelving for displaying a wide range of finished products. Bakelite, besides an interesting and varied line of finished molded articles, added "Revelite" a new and revolutionary fabric to its exhibit (described in detail elsewhere in this issue). Pilloid Cabinet Co., of Swanton, Ohio, turned to acetate sheeting for decorative purposes, shaped into pillar effect and lighted. The appearance of these columns in varied colors enhanced tremendously the set-off given to the company's display of merchandising packages.

The American Management Association with the co-operation of the National Alliance of Art and Industry conducted the competition for the second Irwin D. Wolf Award offered by Irwin D. Wolf, secretary of the Kaufman Department Stores Inc., Pittsburgh, and vice-president in charge of packaging conference and exposition, American Management Association. Fifteen group prizes were offered. No entries were received in the molded plastic containers group. The main award went to a glass container used by O'Cedar Corporation for O'Cedar Wax Cream, designed by Simon de Vaulchier, and manufactured by Owens-Illinois Glass.

Chandler Medalist

Plastics industry is particularly interested in 1933 Chandler Medalist, Dr. George Oliver Curme, Jr., Carbide and Carbon Chemicals research director and vice-president. He is described by Columbia's Prof. Arthur W. Hixson, chairman of the award committee, as "One of the greatest living exponents of aliphatic industry;—he perhaps heads list of those who have brought leadership in organic chemistry from Germany to U. S."

Possibly the most outstanding contribution so far of this brilliant chemist has been the discovery of better methods for the synthetic manufacture of methanol. By his work in lowering cost of an important raw material he has reduced costs of plastic products made from phenol and formaldehyde. The laboratory and development work on Carbide's line of plastic materials has been carried on under Dr. Curme's direct supervision. His earlier synthesis of acetone had a profound effect on the development of lacquers and the nitrocellulose solventa. The medal will be presented March 17 at Havemeyer Hall, Columbia. Dr. L. H. Baekeland is a member of the award committee.

Carbide's Dr. George Curme, Jr.
Plastic industry is deeply indebted to him

English Expositions

A Plastics Trade Exposition is to be opened in April at the London Science Museum and will remain open for three months. Its object will be to show industry how and where the plastics trade can cater for its needs. To insure its success Sir Harry Lyons, D. Sc., F. R. S., director of the museum, has arranged for the cooperation of the Dept. of Scientific and Industrial Research, the Society of Chemical Industry and the British Plastic Moulding Trade Association. The first named will be responsible for the technical display, the Society for the resins, molding powders, and other raw materials, and the Association for the finished products of the industry, the educational side, etc.

The plastic industry of Great Britain was on review at the British Industries Fair, Feb. 20 to March 3. Space reserved by exhibitors increased 50 per cent. above the 1932 figure. Reports state that the Fair was an exceptional success and in particular, companies interested in plastics were entirely satisfied with the results obtained.

A special effort was made by the British Plastic Molding Trade Association to attract visitors to the show. A new initial effort in the form of a "propaganda bulletin" was released by the council of the association through its publicity committee. On the first page an open letter was addressed to business men.

The bulletin contains a number of photographs of new examples of the molders' art, as well as a number of advertisements of members and a list of members of the Association and its officers.

Resin Statistics

Tariff Commission since the discontinuance in 1930 of the Annual Census of Dyes has collected statistics on the production and sales of these coal-tar products in order that it may be currently informed of the trends in the industry. Certain of the statistics relating to 1931 are of interest to the plastics field.

Production of synthetic coal-tar resins increased about seven per cent. as compared with revised 1930 figures (31,833,000 pounds), of which those derived from phenol and cresol increased 17 per cent. and those derived from other sources decreased eight per cent. Sales as compared with revised 1930 figures (24,204,000 pounds) show an increase of 21 per cent. of which phenol and cresol types increased 22 per cent. and those from other sources 19 per cent. A substantial increase in production and sales of synthetic non-coal-tar resins was reported for 1931 but statistics can not be shown.

Synthetic coal-tar resins, production and sales, 1931
(In thousands)

Item	Sales			Production[1]
	Quantity[1] Pounds	Value	Unit Value	Pounds
Derived from phenol and cresol	21,496	$6,646	$0.309	22,647
Derived from other sources	7,848	1,216	.155	11,532
Total synthetic coal-tar resins	29,343	7,862	.268	34,179

[1]Based on net resin content.

Coatings

Necessary Classification

Cleveland Paint and Varnish Production Club recently adopted a resolution which was forwarded to the national federation of production clubs for consideration as a national proposition relating to use of synthetic resins in the manufacture of paints and varnishes.

"Resolved, That the synthetic resin manufacturers, by conference or otherwise, adopt rules and regulations classifying the various synthetic resins and so designate them that their character and application is indicated."

Lacquer Exports

Exports of lacquers and varnishes from U. S. fell from 1,110,025 gallons, worth $2,064,603, in 1931 to 802,491 gallons, valued at $1,342,054, in 1932. Pigmented nitrocellulose lacquers, the chief item, fell from 332,051 to 225,346 gallons, valued at $949,708 and $603,574, respectively. Varnishes (oil, spirit and liquid dryers) fell to 292,922 gallons from 377,430, worth $359,150 and $546,859; thinners dropped to 205,427 gallons from 305,295, valued at $219,571 and $370,229; and clear nitrocellulose lacquers to 78,506 gallons from 94,339, with respective values of $159,759 and $197,307.

New Lacquer Linseed Oil

Archer, Daniels, Midland is now offering A.D.M. 100-a lacquer linseed oil. Advantages mentioned are high resistance to the action of ultra-violet light; eliminates the necessity of using gums and plasticizers—perfect miscibility is effected with the oil, nitrocellulose and solvents; quick drying; fine sanding and polishing qualities; permits lacquers containing 50-70 per cent. oils; unaffected by alcohol. Literature is available.

G. F. Caskey, of the Linden, N. J., sales service laboratory of Beck, Koller is touring the paint centers of the middle west.

Dr. R. J. Moore, Bakelite, spoke before the Cleveland Paint and Varnish Production Club, Feb. 18 on "Recent Developments in the Bakelite Laboratories."

C. S. Ferguson, G. E. research chemist, spoke before Cincinnati-Dayton-Indianapolis Production Club, Feb. 13 on "The Uses and Applications of glyptal resins."

At a recent meeting of the Western N. Y. Paint and Varnish Production Club H. M. Johnson, Beck, Koller, spoke on the general chemical structure of synthetic resins.

James E. Heckel of R. T. Vanderbelt will address chemical engineering dept., of U. of P. on "Phenolic Resins in the Coating Industries."

Visits Home Office

Frank E. Layman, in charge of Sherka Chemical's plastic activities, sails March 23 for extended visit to parent company, Schering-Kahlbaum A. G. of Germany. He is expected back in June or July.

Sherka's Frank E. Layman

A lacquer finish has been perfected that will stand the most severe flexing and aging tests to which flexible rubber is exposed. This type of lacquer is generally reduced from 100-200 per cent. with thinner for dipping or spraying cured rubber and it will air dry to a tough non-marring film. Leatherette cloth can also be given a permanent flexible non-marring finish.

American Society for Testing Materials, through a committee (D-1) is working on specifications and tests for mineral diluents for lacquers and mineral solvents designed for specific use with various types of synthetic resins.

"Color in Everyday Use" was the topic discussed March 6 at a luncheon of the National Alliance of Art and Industry held at the Hotel White, N. Y. City.

1932 Lacquer Sales Statistics

Sales of lacquers during 1932 were 16,459,590 gallons, against 22,706,009 gallons in 1931 and 24,988,067 gallons in 1930, according to preliminary figures compiled by the Bureau of Census from 112 identical manufacturers. Lacquer sales in the final quarter of 1932 were 3,629,097 gallons and compared with 3,709,742 gallons in the preceding quarter and 4,649,554 gallons in the corresponding quarter of 1931. Details of sales of finished lacquers, lacquer thinners and dopes for 1932 and a comparison with 1931, follow:—

	Total Sales		*Finished Lacquer*		*Lacquer Thinners*		*Dopes**	
1932	*Gallons*	*Value*	*Gallons*	*Value*	*Gallons*	*Value*	*Gallons*	*Value*
First quarter....	4,862,895	7,382,228	2,430,554	5,004,037	2,178,473	2,032,355	253,868	345,836
Second quarter†.	4,257,856	6,522,236	2,165,657	4,521,588	1,925,930	1,758,583	166,269	242,065
Third quarter†..	3,709,742	5,530,213	1,900,847	3,732,896	1,611,885	1,525,045	197,010	272,272
Fourth quarter‡.	3,629,097	5,220,418	1,957,257	3,656,387	1,510,267	1,349,482	161,573	214,549
Totals, year...	16,459,590	24,655,095	8,454,315	16,914,908	7,226,555	6,665,465	778,720	1,074,722
1931								
First quarter....	5,689,879	9,637,917	2,893,746	6,642,679	2,574,171	2,617,559	221,962	377,679
Second quarter..	6,824,180	11,105,743	3,371,682	7,616,435	3,157,023	3,036,692	295,475	452,616
Third quarter...	5,542,396	8,724,125	2,779,399	5,875,303	2,497,674	2,454,724	265,323	394,098
Fourth quarter..	4,649,554	7,308,583	2,390,692	5,072,640	2,051,672	1,922,833	207,190	313,110
Totals, year...	22,706,009	36,776,368	11,435,519	25,207,057	10,280,540	10,031,808	989,950	1,537,503

*Does not include base solutions used in the manufacture of lacquers.
†Revised.
‡Preliminary.

Cellulose

Du Pont vs. Sylvania

Alleging infringement of moistureproof cellophane patents, Du Pont Cellophane filed suit Feb. 7 against Sylvania Industrial Corp. in U. S. District Court for the Eastern District of Virginia, at Richmond.

Bill of complaint alleges infringement of patents covering moistureproof material, moistureproof composition, apparatus for coating and method of coating, which include letters patent 1,737,187, 1,826,696, 1,826,697, 1,826,698, and 1,826,699, all of which relate to the manufacture of moistureproof cellophane.

Declaring the du Pont Cellophane is taking a "monopolistic assumption" in filing suit against Sylvania, officials of the latter concern indicated on Feb. 9 they were prepared for a "to the finish fight" in this latest court battle for leadership in America's fastest-growing industry.

According to a preliminary compilation of the 1931 Census figures, total value of pyroxlin plastics reached $11,113,618, and phenolic resins $8,057,620.

Cellulose Acetate in 1932

Further progress was made with the development of cellulose acetate during the past year which should increase the sale of non-inflammable products in 1933, according to the president of Celluloid Corp., W. S. Landes.

The general shrinkage in volume of pyroxylin plastics was accompanied by a further substantial decline in selling prices, occasioned largely by foreign competition, he reports. Importations from countries with depreciated currencies adversely affected the company's business in both sheets and fabricated articles.

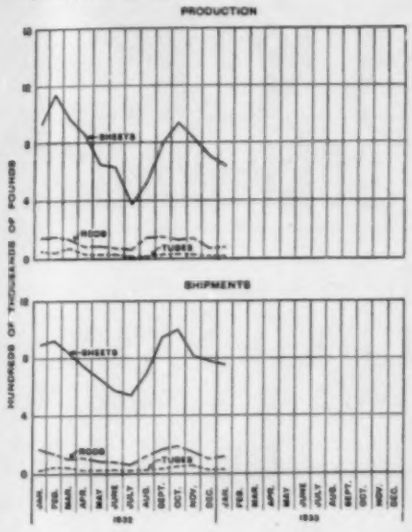
"Most of these importations," according to Mr. Landes, "are coming in at prices far below the cost of production in this country. Prices paid for Japanese toothbrushes, for example, have declined 45 per cent. during the past year."

S. S. Bareford has been appointed assistant director of sales in the sheet rod and tube division of Celluloid. He was formerly sales manager.

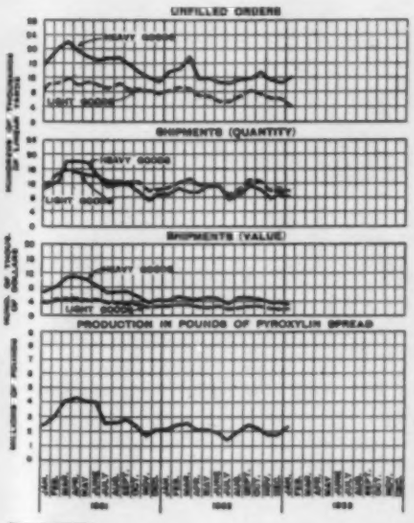
Thirty-seven year old John A. Stevens, president until 1931 of Celluloid, is fighting venerable Irving T. Bush for control of Bush Terminal in the bitter battle of proxies.* Mr. Stevens was elected president of the Terminal Company when the founder of the company became chairman of the board.

Leo Marder who has been in the pyroxylin fabricating business for many years and was formerly one of the owners of Art Ivory Inc., a company since acquired by Celluloid, is now in charge of all fabrication for Celluloid at Newark, N. J.

Pyroxylin Solids



Pyroxylin Coated Textiles



Dept. of Commerce

N. W. Pickering, president, Farrel-Birmingham Co., of Ansonia, Conn., is co-author of "Government Extravagance—The Cause of Price-Cutting" a booklet that contains a valuable message for every business executive.

*Mr. Stevens resigned March 14, effective April 1.

Molded

NEMA Meeting

Molded Insulated Section of NEMA will meet March 17 at NEMA headquarters, 570 Lexington ave., N. Y. City, at 1.30 P. M. No committee meetings will be held in the forenoon. These meetings will be incorporated with the general section meeting in the afternoon.

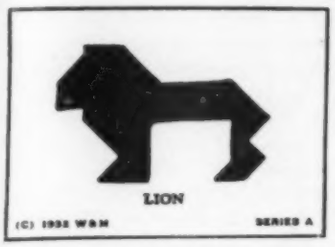
Boonton Rubber Sale

Plant, land and equipment of Boonton Rubber Manufacturing Co., valued at $200,000, was put up at public auction at 2 P. M. on March 3 to satisfy creditors, according to an order of the U. S. District Court. It is said that an arrangement was made prior to the sale by which the

creditors agreed to accept preferred stock in a new company and to advance funds for its continuance. The bondholders bought in the real estate for $66,000 subject to about $9,000 in liens. The attorney for the creditors bought in the equipment for $8,000 and the accounts for $5,000. New company will be known as Techart Manufacturing Co., Dennis G. Maxwell in charge.

American Record—Hi-Ho

Seven bits of geometric figures-Hi-Ho-silhouette puzzle game that took South America by storm and now is spreading in



Seven molded blocks of Lacanite made this

the U. S. like wildfire is a feature article being manufactured by American Record. It is made of Lacanite.

In addition to the seven blocks, each Hi-Ho set contains 10 problem cards. These bear silhouettes of such objects as a Spanish dancer, swan, etc. Set retails for 25 cents and demand is so keen dealers are having difficulty in maintaining stocks. Daily newspapers are now supplying new problems for readers.

Allen & Hills, Inc., Auburn, N. Y., has discontinued business. Stockholders held a meeting on Feb. 4 to discuss the situation. Resinox, largest creditor with a claim of $43,614—which is about half the total amount owed by Allen & Hills, has made an offer to purchase all outstanding claims against the company for 30 cents on the dollar.

Synthetic Moulded Products Inc., Stonington, Conn. has recently been organized. O. W. Greene, Jr. is president and the concern is specializing in molding for the electrical, textile, radio and transportation fields in addition to custom molding of various kinds.

G. E. Wilson, previously sales manager for Norton Laboratories, is now associated with Watertown Manufacturing, Watertown, Conn.

G. S. Berthold, formerly with Norton Laboratories, is now with Plastic Molding, Sandy Hook, Conn.

The paper collapsible tube is now a reality. Shoulder and cap are molded plastic and the filling end is clipped similar to the tin tube.

Tennessee Eastman is constructing two buildings at Kingsport to house its new molded material operations.

A. M. Howard is now located in Toledo as Synthetic Products' research director.

"Industry is Having Its Face Lifted" is the title of a circular on Bakelite products.

Molded Ceramics

American Lava, Chattanooga, Tenn., has issued a new booklet describing "Alsimag" a new ceramic molded material made of magnesium oxide and aluminum oxide. It is manufactured by extrusion in the form of bars, rods, flats, cylinders, etc. It is also pressed accurately to size and shape, in most cases to final dimensions. After forming by extrusion or pressing, it is till possible to machine parts before the final hardening process. "Alsimac" parts may be turned, threaded, drilled or milled to produce intricate shapes. Parts may be glazed where white or colored glazes will add to the attractiveness.

Durez Molder (General Plastics) for March has for its front and back covers photographs of the foyer of RKO Roxy's Theatre. Walls are Durez-bonded bubinga wood. As usual the *Molder* is "newsy" and contains two short technical articles, "Mold Designing and Construction,"(final installment) and "Plasticity."

New Resin

A French rubber publication reports that a new synthetic resin known as "Resoglaz" and belonging to the styrol group has been evolved in Europe. It is claimed that this resin is absolutely colorless and crystal clear, unbleachable by the action of water or oxidizable by cooking or preservation. Moreover, it is stated to be odorless and highly resistant to shock. It is not, however, compatible with cellulose esters and ethers.

Resoglaz can be molded hot; its specific weight is 1.05 and it softens above 150° C. It transmits ultra-violet rays and for this reason is available for the manufacture of screens, as a substitute for window panes in sanitoriums, hospitals, solariums and also for poultry houses. Owing to its high dielectric properties and to the fact that it does not crack under very high frequencies, it should prove a valuable material in the radio and electrical manufacturing industries.

British Novelties

London, Midland & Scottish Railway, Britain's greatest railroad system, is providing molded bakelite domino sets in circular cases on its long-distance expresses. These sets are in charge of the porters and are loaned to passengers in

the restaurant car. They are informed of this by a note printed on the menu. The sets are attractive and unusual, molded circular cases for dominoes being uncommon.

Another novelty is a stick-up safeguard, a molding shaped identically with a revolver and enclosing a mechanism which, when the trigger is pressed, creates a blinding flash. However, not many people care to carry round such an instrument on the off-chance of meeting a bandit, so it has been made useful by the provision of an additional purpose. Use can be made of the flash to ignite a gasoline-soaked cord—and the gadget becomes a cigar lighter.

Laminated

Tentative Standards

A.S.T.M. (American Society for Testing Materials) has just published "Tenative Methods of Testing Laminated Tubes Used in Electrical Insulation, D348-32T; also "Tentative Methods of Testing Laminated Round Rods Used in Electrical Insulation, D349-32T. Copies may be obtained by any one interested and criticisms are welcomed by J. A. Scott, secretary of Committee D-9 on Electrical Insulating Materials, General Electric, Schenectady, N. Y.

A new X-ray tube is made of laminated paper. Invention was made at the Palmer Physical Laboratory, Princeton University.

Bakelite's Booklet

Bakelite's Laminated 52-page booklet is available. Detailed reference to special forms of manufacture is given and information on properties and uses is included. Special chapters cover manufacture, properties, uses, gearings, and directions for working material; lists and tables are shown covering kinds and weights of stock, properties in both the paper base and fabric base types and in impact molding material. Four illustrations of the manufacturing processes are included, with 40 plates of various products and a 2-page spread in four colors giving some of the decorative effects in the Formica Co.'s Formica, and in the Micarta of Westinghouse. Other fabricators whose products are illustrated include G. E., Continental, Spaulding, and National Vulcanized Fibre, Mica Insulator Co., Synthane Corp., and Panelyte Corp. Chapters on manufacture, on gear use in the automotive and manufacturing fields, and concluding chapter on working Bakelite Laminated are of particular value to those who have not yet utilized the unusual qualities that laminated alone can supply.

Machinery

At the recent meeting of the Board of Directors of Farrel-Birmingham, Ansonia, Conn., Franklin Farrel, Jr., was elected chairman of the board; Nelson W. Pickering, president. Alton Farrel, who has been connected with the company for 30 years and has been treasurer for the past 20, resigned as treasurer and director, because of illness. Frederick M. Drew, Jr., was elected treasurer and director in his place.

Leeds & Northrup exhibited the new Round Chart Micormax Indicating Recorder and the new all-purpose case for the standard Micormax Recorder at the recent Power Show.

Bertram with Loeser

H. Henry Bertram, Associated Manufacturers' of Toilet Articles president, has resigned from A. P. Babcock Co., to become affiliated with Frederick Loeser & Co., Brooklyn, N. Y. department store. He will head its toilet goods department. Mr. Bertram has tendered his resignation to the executive committee of the A. M. T. A., but no action as yet has been taken.